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Application No. 10/706,715
Amendment dated July 21, 2009
Reply to Office Action of January 22, 2009

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A surgical ligation clip for ligating a fluid carrying structure, said clip comprising:
 - a mid-longitudinal axis, a distal end, a proximal end opposite said distal end, a maximum clip length between said distal and proximal ends, a maximum clip height perpendicular to said maximum clip length, and a maximum clip width perpendicular to said maximum clip length and said maximum clip height, said maximum clip length being greater than twice said maximum clip height;
 - an upper support member oriented generally along the mid-longitudinal axis of said clip, said upper support member having a maximum width adjacent said distal end perpendicular to the mid-longitudinal axis in a first plane generally parallel to the mid-longitudinal axis, and having a width less than said maximum width thereof in the first plane over a majority of the length of said clip between said distal and proximal ends;
 - a lower support member oriented generally along the mid-longitudinal axis of said clip, said lower support member having a maximum width adjacent said distal end perpendicular to the mid-longitudinal axis in a second plane generally parallel to the mid-longitudinal axis, and having a width less than said maximum width thereof in the second plane over a majority of the length of said clip between said distal and proximal ends; and
 - a connector at said proximal end of said clip joining said upper and lower support members, said connector having a maximum width perpendicular to the mid-longitudinal axis in a third plane generally parallel to the mid-longitudinal axis, and a maximum connector height in a fourth plane perpendicular to the mid-longitudinal axis and the third plane, said maximum connector height being equal

equal to said maximum clip height, wherein said clip is formed of a single piece of wire having a substantially uniform thickness, said connector is formed of multiple coil windings of said single piece of wire, said coil windings of said connector have an interior and are unwound when moving said clip from a closed position to an open position, and said clip has a first free end and a second free end, each of said first and second free ends terminating proximate said proximal end, the first plane, the second plane, and the third plane are parallel to one another, at least one of said maximum width of said upper support member and said maximum width of said lower support member is greater than said maximum width of said connector, said distal end has a distal height parallel to said maximum clip height and said proximal end has a proximal width parallel to said maximum clip width, and each of said distal height and said proximal width is twice the thickness of said wire.

2. (previously presented) The clip of claim 1, wherein said wire has a maximum thickness less than or equal to 1.0 mm.
3. (currently amended) The clip of claim 1, wherein said connector is adapted to bias said upper and lower support members toward one another in-a the closed position.
4. (currently amended) The clip of claim 1, wherein said connector is adapted to apply a force to said upper and lower support members to bias said upper and lower support members toward one another in-a the closed position, the force being greater than that needed to move said upper and lower members into contact with one another.

Claim 5 (cancelled).

6. (currently amended) The clip of claim-~~5~~1, wherein said first end and said second end each terminate proximate said interior of said coil.
7. (original) The clip of claim 1, wherein said upper and lower support members each include a loop at said distal end.

8. (original) The clip of claim 1, wherein said upper and lower support members each have two parallel longitudinal members with a recess therebetween, said longitudinal members of said upper support member being adapted to generally overlie said longitudinal members of said lower members.
9. (original) The clip of claim 8, wherein said longitudinal members of at least one of said upper and lower members extend along a substantial portion of the length of said clip.
10. (original) The clip of claim 1, in combination with a clip applier for applying the clip to the fluid carrying structure.
11. (original) The clip of claim 10, wherein said clip applier includes a magazine adapted to hold a plurality of clips.
12. (currently amended) A surgical ligation clip for ligating a fluid carrying structure, said clip comprising:

a mid-longitudinal axis, a distal end, a proximal end opposite said distal end, a maximum clip length between said distal and proximal ends, a maximum clip height perpendicular to said maximum clip length, and a maximum clip width and a minimum clip width perpendicular to said maximum clip length and said maximum clip height, said maximum clip length being greater than twice said maximum clip height;

an upper support member oriented generally along the mid-longitudinal axis of said clip between said proximal and distal ends of said clip, said upper support member having a maximum width adjacent said distal end perpendicular to the mid-longitudinal axis in a first plane generally parallel to the mid-longitudinal axis, and having a width less than said maximum width thereof in the first plane over a majority of the length of said clip between said distal and proximal ends;

a lower support member opposite said upper support member in a vertical plane parallel to the mid-longitudinal axis, said lower support member being oriented generally along the mid-longitudinal axis of said clip between said

proximal and distal ends of said clip, said lower support member having a maximum width adjacent said distal end perpendicular to the mid-longitudinal axis in a second plane generally parallel to the mid-longitudinal axis, and having a width less than said maximum width thereof in the second plane over a majority of said clip between said distal and proximal ends; and

a connector at said proximal end of said clip joining said upper and lower support members, said connector having a maximum connector width and a minimum connector width, said maximum connector width and said minimum connector width both being perpendicular to the mid-longitudinal axis in a third plane generally parallel to the first and second planes and the mid-longitudinal axis, said minimum connector width is equal to said minimum clip width, wherein said clip is formed of a single piece of material having a substantially uniform thickness, ~~and has with~~ a first free end and a second free end, ~~each of said first and second free ends terminating proximate said proximal end, and~~ at least one of said free ends facing in a direction that is at least one of transverse to the mid-longitudinal axis of said clip and away from said proximal end of said clip, said connector is formed of multiple coil windings of said single piece of material, said coil windings of said connector have an interior and are unwound when moving said clip from a closed position to an open position, at least one of said maximum width of said upper support member and said maximum width of said lower support member is greater than said maximum width of said connector, said distal end has a distal height parallel to said maximum clip height and said proximal end has a proximal width parallel to said maximum clip width, and each of said distal height and said proximal width is twice the thickness of said material.

13. (original) The clip of claim 12, wherein at least one of said free ends faces a direction generally transverse to the mid-longitudinal axis of said clip.
14. (original) The clip of claim 12, wherein at least one of said free ends faces generally towards said distal end of said clip.

15. (original) The clip of claim 12, wherein said first end and said second end each face away from said proximal end of said clip.
16. (currently amended) The clip of claim 12, wherein said connector is adapted to bias said upper and lower support members toward one another in a the closed position.
17. (currently amended) The clip of claim 12, wherein said connector is adapted to apply a force to said upper and lower support members to bias said upper and lower support members toward one another in a the closed position, the force being greater than that needed to move said upper and lower members into contact with one another.

Claim 18 (cancelled).

19. (currently amended) The clip of claim ~~18~~ 12, wherein said first end and said second end each terminate proximate said interior of said coil.
20. (original) The clip of claim 12, wherein said upper and lower support members each include a loop at said distal end.
21. (original) The clip of claim 12, wherein said upper and lower support members each have two parallel longitudinal members with a recess therebetween, said longitudinal members of said upper support member being adapted to generally overlie said longitudinal members of said lower members.
22. (original) The clip of claim 21, wherein said longitudinal members of at least one of said upper and lower members extend along a substantial portion of the length of said clip.
23. (original) The clip of claim 12, in combination with a clip applier for applying the clip to the fluid carrying structure.
24. (original) The clip of claim 23, wherein said clip applier includes a magazine adapted to hold a plurality of clips.

Claims 25 and 26 (cancelled).

27. (previously presented) The clip of claim 1, wherein at least one of said upper support member and said lower support member is enlarged adjacent said distal end of said clip.
28. (previously presented) The clip of claim 1, wherein each of said upper support member and said lower support member is formed of a first leg and a second leg.
29. (previously presented) The clip of claim 28, wherein said first leg and said second leg extend generally parallel to one another from said connector.
30. (previously presented) The clip of claim 29, wherein a gap is formed between said first leg and said second leg, and said gap has a width approximately equal to the thickness of said wire.
31. (previously presented) The clip of claim 12, wherein at least one of said upper support member and said lower support member is enlarged adjacent said distal end of said clip.
32. (previously presented) The clip of claim 12, wherein each of said upper support member and said lower support member is formed of a first leg and a second leg.
33. (previously presented) The clip of claim 32, wherein said first leg and said second leg extend generally parallel to one another from said connector.
34. (previously presented) The clip of claim 33, wherein a gap is formed between said first leg and said second leg, and said gap has a width approximately equal to the thickness of said material.
35. (previously presented) The clip of claim 1, wherein said clip has a minimum clip width perpendicular to said maximum clip length and said maximum clip height, and said connector has a minimum connector width in the third plane, said minimum connector width being equal to said minimum clip width.
36. (previously presented) The clip of claim 12, wherein said connector has a maximum connector height in a fourth plane perpendicular to the mid-longitudinal axis and the third plane, said maximum connector height being equal to said

to said maximum clip height.

37. (new) The clip of claim 1, wherein said upper support member is connected to an upper portion of said connector and said lower support member is connected to a lower portion of said connector so that said coil windings are unwound when opening said clip.
38. (new) The clip of claim 12, wherein said upper support member is connected to an upper portion of said connector and said lower support member is connected to a lower portion of said connector so that said coil windings are unwound when opening said clip.